July 17, 2009

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Via Electronic Mail

Dear Chris,

American Rivers appreciates the efforts of the HEA Steering Committee, and the opportunity to meet in person in June to discuss implementation of the HEA. The distribution of the HEA documents dated June 18 and July 6 2009, help clarify the progress and ongoing approach of the HEA Steering Committee. These documents include the "Approach for Applying the Habitat Expansion Agreement Criteria to the List of Potential Actions" ("Approach Document"), the "Working Definitions of Evaluation, Selection and Approval Criteria" ("Criteria Definitions"), and the "Working List of Potential Habitat Expansion Actions and Evaluation of Significant Factors" ("LPA with Factors") and the list of Removed Actions. These documents and the work they embody represent significant progress toward the HEA objectives. However, American Rivers remains concerned about the rate of progress and the approach described to date. We offer the comments below.

Criteria Definitions

Evaluation Criteria

Criterion (b): "adequate scale of expansion of spawning, rearing and adult holding habitat (one or more larger contiguous gains is favored over numerous smaller gains; increase habitat is favored over enhanced habitat", is further defined by the Steering Committee to mean: a) the HEP should make measurable and meaningful improvement in habitat; b) it requires projects to be large; c) numerous small projects would provide less benefit than a larger project; d) the greatest potential to make meaningful change may involve focusing projects on a limited number of watersheds rather than spreading projects out across many watersheds

The working definition misses or modifies two important points inherent in criterion (b). First, an ***increase*** in habitat is favored over *enhanced* habitat. Second, the suggestion that the greatest potential for change may involve "focusing projects on a limited number of watersheds" changes the intent of this criterion. Gone is the idea that ***one*** project is favored over numerous smaller gains. These two aspects of the working definition should be corrected.

Criterion (e): "minimal human intervention needed to achieve access to expanded spawning rearing and adult holding habitat (volitional access is favored over that which requires a high degree of human intervention)". The expanded definition focuses on projects that might provide free access over a trap and haul program. It should be noted in the working definition that this criterion clearly favors expanding access to habitat, as opposed to enhancing habitat.

Criterion (h): " acceptable length of time to implement (earlier gains are favored over later gains)", is further defined to mean projects that can be implemented sooner with shorter periods to show benefits will be preferred, e.g., 10 years or less. I note that the threshold created here is 10 years, whereas in the Approach Document and LPA with Factors analysis establishes an acceptable timeframe to be only 5 years to implementation. The numbers should be made consistent, and an attempt to link an acceptable timeframe to something of meaning, e.g., a biological metric such as a period equivalent to two life-cycles, or the expected time to complete a complex engineering project with effects on listed species.

Criterion (j): "consistency with NMFS Viable Salmonid Population guidance, ESA recovery goals and recovery plan, and expected contribution to species recovery (higher consistency and greater contributions are favored". American Rivers would recommend deferring to NMFS to develop the working definition for this criterion, or at minimum provide NMFS an opportunity to modify this working definition as it deems appropriate.

Criterion (n): "low expectation for the action to be undertaken by the Licensees or others in the near future", is further defined to mean within 5 years. While American Rivers agrees it is necessary to favor projects that could be implemented sooner rather than later, it is inappropriate to use an arbitrary length of time as a binary criterion of acceptability.

Selection Criteria

Criterion (a): contribution to achieve the Habitat Expansion Threshold. The Habitat Expansion Threshold is defined in section 2.2 of the HEA as "to expand spawning, rearing ***and*** adult holding habitat sufficiently to accommodate an estimated net increase of 2,000 to 3,000 Spring-Run for spawning ("Habitat Expansion Threshold") in the Sacramento River Basin…" (emphasis added) The working definition should identify the clear intent to expand all three functional types of habitat. Many of the projects in the List of Potential Actions address only one target life stage, sometimes not one of the three identified in the threshold. To the extent these more limited projects are meant to be implemented in conjunction with other projects that together address the three key habitat types, the projects should be clearly linked.

Criterion (d): "timing (action[s] can be accomplished in a reasonable period of time]" is further defined to mean projects that "can be implemented in a reasonable period of time (e.g., les than 5 years)…" and also "projects that benefit spring-run Chinook within a relatively short period of time (e.g., 10 years or less) will be favored." This definition seems to establish two preferred timelines. Similar to the comment on evaluation criterion (h), the 5-year cutoff suggested here and applied in the approach to evaluate the potential actions is inconsistent with criterion (h) and seems arbitrarily short.

NMFS Approval Criteria

American Rivers is encouraged to note that the Steering Committee is considering the NFMS Approval Criteria as part of its selection process because we strongly believe that the failure to consider these criteria is not an acceptable justification for proposing actions that cannot meet NMFS Approval Criteria. Generally, American Rivers believes the Steering Committee should defer to NMFS on developing the working definitions of these criteria and provide NMFS and opportunity to modify the proposed definitions as NMFS deems appropriate.

Criterion (e): "meets the requirements for eligible habitat expansion action(s) pursuant to Section 3 of this Agreement", is further defined to mean that according to Evaluation Criterion (n) projects required as part of other proceedings or with a high likelihood of being implemented within 5 years will *not* be favored and may be considered ineligible. Again, the 5-year threshold was not included in the HEA and seems arbitrarily short. Given the numerous steps of this process, most involving 90-day review and comment periods, in addition to independent analysis and dispute resolution, all occurring before substantial designs have been developed, a period longer than 5 years seems reasonable.

Approach for Applying Criteria to Potential Actions

American Rivers supports the Steering Committees efforts to streamline the consideration of the 100+ potential actions identified in this process. Comments on the 10 factors are included below.

Factor 1: "Known 'deal killers' (no political support, subject to existing conditions proposed action is a study or regulatory in nature". American Rivers suggests clarifying that a "deal killer" is being ineligible per Section 3 of the HEA, and removing the terms "subject to existing conditions" and "regulatory in nature", because they are ambiguous and not inclusive of all the potential ineligibilities listed in Section 3. Moreover, the factors that would render a potential action ineligible include the factors a – d listed in Section 3, but the ineligibility factors are not limited to those four.

Factor 7: "Acceptable length of time to implement (Y≤5 years, N>5 years)". This factor should not be a binary yes or no given that the selection of 5 years is somewhat arbitrary and a project that takes 5 years and 1 week is essentially equivalent to a project that takes 4 years and 51 weeks, all other things being equal. Perhaps projects could score high, medium and low depending on three periods for expected implementation.

Examples

The examples provided of applying the factors to filter the potential actions suggests that applying Factors 2 and 7 would help identify the more cost-effective actions. Factor 2 refers to measurability and Factor 7 refers to length of time to implement. It would appear these factors would only very directly indicate cost effectiveness, and perhaps not even in the desired manner. We believe applying the factors could be an efficient way to evaluate actions, but the Steering Committee should consider further how it would work.

Methodology of Approach
The methodology is described to have three steps 1) initial screening, 2) application of filter sets, and 3) application of modifiers. As stated by American Rivers in person at the June meeting, it is extremely difficult to provide useful comments on the Methodology of the Approach when the Steering Committee has not provided the results of application of the approach. Nevertheless, we will try to provide useful feedback on the approach.

Initial Screening
The initial screening is intended to remove actions that have "deal killers". However, the List of Potential Actions includes 5 actions identified as having known "deal killers", including Phase 1b and 2 of the Battle Creek restoration agreement and passage over Shasta and Folsom as required under the OCAP BiOp.

Filter Sets
Although the groupings of factors created for each of the filters generally makes sense, it is not clear that the application of the filters is necessary or very useful. As the methodology describes, applying the filter sets generates a list of projects for each filter set, after which modifiers would be applied to each short list to rank actions. It is not clear the utility of ranking actions on a series of lists of those lists are going to be combined into one master list. For example, what happens to the rankings each action obtained on the filter lists when combined into a larger list?

Ranking the Actions
As an alternative, or addition to, the methodology described, American Rivers suggests scoring each potential action based on how each performs on the 10 factors. American Rivers does not necessarily agree that the 10 factors chosen are the most appropriate, or that each factor is properly defined (e.g., time to implement cutoff at 5 years), but ranking the potential actions, or grouping into high, medium and low potential can be accomplished by scoring the actions based on the 10 identified factors (or others). However, each factor is not of equal value, and thus it is necessary to apply weightings to the factors to actions with the highest potential to deliver meaningful results.

American Rivers has performed such an analysis using the List of Potential Actions and the performance of each action on the 10 factors as determined by the Steering Committee.

The weightings applied to each factor are as follows:
Target Life Stages: The potential scores range from 1 to 6 representing one point for each life stage the action addresses. A classification of "All" receives a score of 6. This factor is fundamental to the definition of the Habitat Expansion Threshold, hence a high weighing.
Deal Killer: The potential scores are 3, for No, 0 for Maybe, and -25 for Yes. A high score here is less valuable in our view than the number of life stages addressed, and those projects with a Deal Killer are essentially eliminated from consideration with a -25 score.
HET Measurability: The potential scores range from 3 for High, 2 for Medium and 1 for Low.
HET Contribution: The potential scores are 5 for High, 3 for Medium and 1 for Low. We believe the scale of contribution to the HET is of greater importance than the measurability of the action, and a High classification is also more valuable than simply not having a deal killer. In addition, this factor corresponds to a NFMS Approval Criterion (a).

Out of Deer, Mill and Butte Creek: The potential scores are 3 for Yes, and 0 for No. This factor is important to the HEA, but it is not identified as an Approval Criterion.
Out of Northern Sierra: The potential scores are 4 for Yes, and 0 for No. The rationale for this score is similar to the factor above, but if being out of Deer, Mill and Butte Creek is good, then being out of the Northern Sierra area is even better – hence a higher score for a Yes.
Segregate Spring-Run and Fall-run: The potential scores are 4 for Yes, and 0 for No. This receives a high weighting because it is an important criterion at all levels, but it does not receive equal weight to HET Contribution because it is less fundamental to the HEA than the expansion threshold.
Time to Implement: The potential scores for this factor are 4 for ≤ 5 years, and 0 for > 5 years. American Rivers believes this factor should be scored on a sliding scale or as high, medium and low with different values for each. However, we have retained the binary structure for simplicity of interpretation.
Expand or Enhance Category: The potential scores for this factor are 5 for expansion and 2 for Enhancement. Expansion is weighted significantly higher than enhancement because the Habitat *Expansion* Agreement is arguably intended to favor expansion, and because NMFS Approval Criterion (c) explicitly establishes the goal of supporting establishing a geographically separate population of Spring-run.
Volitional: Potential scores under this factor are 3 for Yes, and 0 for No. This factor is weighted less than the previous category because while it is an Evaluation and Selection Criterion, it is not among the Approval Criteria.
Supported: Potential scores for this factor are 1 for Yes and 0 for No because there is information on this factor for relatively few of the actions and it is not an Approval Criterion, among other reasons.

By assigning scores/weights to the identified factors, one can get a sense of the relative ranking of the 120 potential actions. The combination of the 10 factors identified by the Steering Committee and the weightings applied by American Rivers shows that projects that involve passage to historic or new spawning/rearing habitat over existing dams generally ranked the highest. The LPA as provided by the Steering Committee does not link associated projects that might have scored higher had they been combined into an integrated set of actions.

Such a ranking approach as described above can quickly identify the projects with the most potential to deliver the desired results out of the 120 potential actions. American Rivers suggests that the Steering Committee apply such a ranking methodology to shorten the list to a number that would be manageable to include in the next phase of analysis.

Next Steps

The document describing the approach to applying the criteria to the LPA is incomplete as distributed. The approach goes only as far as applying a small subset of the criteria toe the LPA, and not in a quantitative or definitive manner. In other words, several steps remain before the Steering Committee can identify an action(s) for the Habitat Expansion Plan.

The obvious next step for the Steering Committee is to apply a ranking methodology such as the one described above to the entire LPA, and identify a top tier of projects to graduate to the next level of analysis. The Steering Committee would then quantify wherever possible the relative

benefits of the top tier projects, and collect more detailed information in all cases, to narrow the list even further to allow an in-depth analysis of just a handful of potential actions.

As discussed in the June meeting, the step of reducing the top tier list to a very short list on which to conduct detailed analysis, including feasibility and cost, could be accomplished by assembling a group of experts to provide professional judgments on each potential action. However, the group of experts should be acceptable to Signatories to the HEA in order to minimize the risk of disputes in subsequent phases.

Given the magnitude and complexity of this analysis, it seems likely that additional time will be required, beyond the time allotted in the HEA, to complete a thorough and thoughtful analysis of potential actions. If the Steering Committee is considering seeking an extension, American Rivers recommends making the request of Signatories as soon as possible, and be prepared to describe in detail the steps yet to be undertaken and the time required to complete them.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Steve Rothert
Director, California Field Office

Attachment

Reference Number	Description of Action	Target Life Stage(s)	Stream	Notes	Deal Killers (1)	HET Measurability (2)	HET Contribution (3)	Outside of Deer, Mill, Butte (4)	Outside of Northern Sierra Diversity Group (5)	Segregate Spring and Fall Runs (6)	Time to Implement (7)	Category (8)	Volitional Passage* (9)	Supporting Questionnaire/ Comment** (10)		Target Life Stages	Deal Killer	HET Meas	HET Contrbution	Out Deer, Mill, Butte	Out N Sierra	Segregate?	Time	Category	Volitional	Supported	Total
															Range of potential scores	6, 4, 3, 2, 1	3, 0, -25	3, 2, 1	5, 3, 1	3, 0	4, 0	4, 0	4, 0	5, 2	3, 0	1, 0	
NWC-10	Conduct a passage feasibility study, including an assessment of potential habitat above Whiskeytown Dam. If the action is feasible and passage above Whiskeytown Dam can substantively contribute to the Long-Term viability of the ESU, then develop and implement a Long-Term fish passage program.	Adult Immigration, Adult Holding, Spawning	Clear Creek	Feasibility concerns due to flow, mine contamination, upstream passage barriers, gravel availability, and trap-and-haul limitations.	Maybe	H	H	Y	Y	Y	N	Expansion	Maybe			4	0	3	5	3	4	4	0	5	1	0	**29**
NWC-6	Clear Creek gravel supplementation in the reach where spring-run Chinook and steelhead spawn by placing	Spawning	Clear Creek	This would not be self-sustaining. It would need to be redone periodically	Maybe	M	H	Y	Y	Y	Y	Enhancement		Y		3	0	2	5	3	4	4	4	2	0	1	**28**
SBW-19	Operate segregation weir at ACID to separate fall-run and spring-run on mainstem.	Spawning	Upper Sacramento River	DFG previously stated that they would not support this type of action.	Maybe	M	H	Y	Y	Y	Y	Enhancement		Y		3	0	2	5	3	4	4	4	2	0	1	**28**
NS-55	Work with State and Federal water acquisition programs to develop dedicated instream water; participate in the lower Mill Creek Watershed Restoration Project.	All	Mill Creek		N	M	H	N	N	Y	Y	Enhancement		Y		6	3	2	5	0	0	4	4	2	0	1	**27**
NS-90	Implement a trap-and-haul project on the North Fork Feather River.	All	Feather River		Maybe	H	H	Y	N	Y	N	Expansion	N			6	0	3	5	3	0	4	0	5	0	0	**26**
NS-91	Implement a trap-and-haul project on the Middle Fork Feather River.	All	Feather River		Maybe	H	H	Y	N	Y	N	Expansion	N			6	0	3	5	3	0	4	0	5	0	0	**26**
NS-94 a	Implement a trap-and-haul program on the North Yuba River above New Bullards Bar Reservoir.	All	Yuba River		Maybe	H	H	Y	N	Y	N	Expansion	N			6	0	3	5	3	0	4	0	5	0	0	**26**
NS-94 b	Implement a trap-and-haul program on the North Yuba River below New Bullards Bar.	All	Yuba River		Maybe	H	H	Y	N	Y	N	Expansion	N			6	0	3	5	3	0	4	0	5	0	0	**26**
NS-94 c	Implement a trap-and-haul program on the Middle Yuba River in combination with increased flow releases.	All	Yuba River		Maybe	H	H	Y	N	Y	N	Expansion	N			6	0	3	5	3	0	4	0	5	0	0	**26**
NS-1	Supplement flows in Antelope Creek with water acquired from willing sellers consistent with applicable guidelines or negotiate agreements to allow passage of	All	Antelope Creek	Economic feasibility and level of local/political support for flow supplementation are unknown.	N	M	L	Y	N	Y	Y	Enhancement		Y		6	3	2	1	3	0	4	4	2	0	1	**26**
NS-14	Implement Iron Canyon Fish Ladder Rehabilitation Project.	Adult Immigration	Big Chico Creek	City of Chico intends to adopt a Mitigated Negative Declaration for the project. Final report on the repair and construction is complete. CEQA complete and	N	H	H	Y	N	Y	Y	Enhancement		Y		1	3	3	5	3	0	4	4	2	0	1	**26**
NWC-5	Inject LWD and boulders in the canyon reach of Clear Creek to induce gravel deposition to support pocket spawning by salmonids.	Spawning	Clear Creek	Issue w/ kayakers, lower priority	N	L	L	Y	Y	Y	Y	Enhancement		Y		3	3	1	1	3	4	4	4	2	0	1	**26**
NS-84 b	Rehabilitate Yuba River Narrows spawning habitat with possible segregation weir approximately 6 miles below Englebright Dam.	Spawning	Yuba River	FWS and DFG do not currently support using a segregation weir.	Maybe	H	H	Y	N	Y	Y	Enhancement		Y		3	0	3	5	3	0	4	4	2	0	1	**25**
NWC-19	Re-establish natural channel morphology by: (1) applying NMFS gravel mining criteria to all gravel mining projects; and (2) integrating natural morphological features and functions into bank protection and other stream side development projects.	All	Cottonwood Creek	This action, while on Cottonwood Creek, is mentioned in the Recovery Plan as benefiting Beegum Creek. AFRP needs funding for sediment budget study.	N	L	L	Y	Y	N	Y	Enhancement		Y		6	3	1	1	3	4	0	4	2	0	1	**25**
NS-51	Purchase TNC's Mill Creek Water Rights to provide additional stream flows for spring-run Chinook and steelhead.	All	Mill Creek	Project provides 18 cfs or nearly 10% of Mill Creek base flow. Delta 4-pumps pays for pumping costs associated with Ground Water Exchange Program. TNC purchased with intent to sell. Identified in	N	M	H	N	N	Y	Y	Enhancement		Y		6	FALSE	2	5	0	0	4	4	2	0	1	**24**
B-9	Modernize/upgrade PG&E facilities to reduce the potential for flow fluctuations and outages.	All	Battle Creek		N	L	L	Y	Y	N	Y	Enhancement				6	3	1	1	3	4	0	4	2	0	0	**24**
SBW-18	Pursue opportunities, consistent with efforts conducted pursuant to Senate Bill 1086 (SB 1086), to create a 50,000-acre meander belt from Keswick Dam	All	Upper /Middle Sacramento River	Worth considering after assessing current carrying capacity of Sacramento River mainstem habitats.	N	L	L	Y	Y	N	Y	Enhancement				6	3	1	1	3	4	0	4	2	0	0	**24**
B-4	Develop and implement pulse flow schedules during peak migration periods for years with low water availability.	Adult Immigration	Battle Creek		N	L	L	Y	Y	Y	Y	Enhancement		Y		1	3	1	1	3	4	4	4	2	0	1	**24**
NS-83	Restore backwater, side-channel, and riparian/ floodplain habitat in the Lower Yuba River.	Juvenile Emigration, Summer/Winter Rearing	Yuba River	Project will build on current AFRP-funded pilot project and complements Narrows Gravel Rehabilitation Project (NS-86).	N	L	L	Y	N	N	Y	Expansion	Y	Y		2	3	1	1	3	0	0	4	5	3	1	**23**
NS-67 b	Fish Passage into Upper Yuba Watershed. Design and conduct an experimental fish passage program to evaluate adult distribution, survival, spawning, and production in habitats above Englebright Dam. If the experimental fish passage program demonstrates that passage above Englebright Dam can substantively contribute to the Long-Term viability of the ESU, then develop and implement Long-Term fish passage programs.	Adult Immigration and Juvenile Emigration	Yuba River	Potential project based on alternative selected under NMFS Fish Passage Evaluation which is not yet completed. HEA could be used for the first period of project implementation.	Maybe	M	H	Y	N	Y	N	Expansion	Maybe	Y		2	0	2	5	3	0	4	0	5	1	1	**23**
NS-23	Purchase existing water rights from willing sellers.	All	Butte Creek	All Lower Butte Creek actions need to be investigated to determine if the actions were carried out in previous restoration activities.	N	M	L	N	N	Y	Y	Enhancement		Y		6	3	2	1	0	0	4	4	2	0	1	**23**
NS-92	Increase instream flow in key tributaries (acquisitions, leases, transfers, banking, water use efficiency improvements, etc.).	Adult Immigration and Juvenile Emigration	Antelope, Mill, Deer, Paynes, Cow, Bear, and Butte creeks	Proposes utilizing skills and roles of several groups to put together non-regulatory packages that coordinate different tools to assure flows for spring-run and steelhead.	N	M	H	N	N	Y	Y	Enhancement		Y		2	3	2	5	0	0	4	4	2	0	1	**23**
NS-67 a	Implement actions to enhance habitat conditions and improve access within the area above Englebright Dam, including increasing minimum flows, providing passage at Our House, New Bullards Bar, and Log Cabin dams, and assessing feasibility of passage **improvement at natural barriers**.	All	Yuba River	PG&E and NID are currently relicensing projects in the upper Yuba watershed; anadromous salmonid issues in the upper watershed are generally being handled outside of **FERC relicensing**.	Maybe	M	H	Y	N	Y	N	Enhancement		Y		6	0	2	5	3	0	4	0	2	0	1	**23**
SBW-21	Implement projects that improve fish passage between the Sacramento River and flood bypasses.	Adult Immigration	Sacramento River	Clear Creek Tech Team suggested moving Clear Creek action to Sacramento River action.	N	L	H	Y	Y	N	Y	Enhancement				1	3	1	5	3	4	0	4	2	0	0	**23**
NWC-25	Developing long-term spawning gravel supply by processing gold mine tailings on DFG and BLM properties adjacent to Clear Creek.	Spawning	Clear Creek	Provides Long-Term and inexpensive supply of spawning gravel, prevents entrainment of mercury, and creates functional floodplain in tailing area. CVPIA funded and completed feasibility study. Gravel augmentation required in OCAP BO.	Maybe	L	L	Y	Y	Y	Y	Enhancement		Y		3	0	1	1	3	4	4	4	2	0	1	**23**
NS-27	Develop sustainable instream flow criteria for spawning and incubation periods and implement flow ramping protocols to protect all life stages of spring-run Chinook salmon.	All	Butte Creek	Identified in CVPIA Long-Term Plan.	N	L	L	N	N	Y	Y	Enhancement		Y		6	3	1	1	0	0	4	4	2	0	1	**22**
NS-5	Improve passage conditions at Paynes crossing to allow upstream passage during low flows.	Adult Immigration, Adult Holding	Antelope Creek	Also referred to as Tehama Wildlife Area crossing. AFRP is currently funding a fish passage feasibility study at this site, but as of October 2008 funding has not been identified for construction.	N	H	L	Y	N	Y	Y	Enhancement		Y		1	3	3	1	3	0	4	4	2	0	1	**22**
NWC-2	Develop and implement a spawning gravel augmentation plan.	Spawning	Beegum Creek	Issue?	N	M	L	Y	Y	N	Y	Enhancement				3	3	2	1	3	4	0	4	2	0	0	**22**
NS-78	Reduce sources of chronic road related erosion of sediment.	All	Antelope Creek	On-going activity.	N	L	L	Y	N	N	Y	Enhancement		Y		6	3	1	1	3	0	0	4	2	0	1	**21**
NS-85	Operate and maintain real-time flow and temperature monitoring gages on Big Chico, Butte, Deer, and Mill Creeks (with possible expansion to Antelope Creek).	All	Big Chico, Butte, Deer, and Mill creeks	Funds would continue operation and maintenance of flow gages that lose funding in 2010.	N	L	L	Y	N	N	Y	Enhancement		Y		6	3	1	1	3	0	0	4	2	0	1	**21**
NWC-9	Enhance watershed resiliency by identifying and implementing projects that would reduce the potential for, and magnitude of a catastrophic wildfire, restore meadows to potentially increase summer flows and reduce local water temperatures, or increase riparian shade.	All	Clear Creek	Include only wildlife and revegetation actions (lower priority) since other issues being implemented.	N	L	L	Y	Y	N	N	Enhancement		Y		6	3	1	1	3	4	0	0	2	0	1	**21**
B-19	Modify gravel pits and mounds to ensure full drainage of these features to allow flooding while preventing stranding and warm water predator habitat.	Juvenile Emigration, Summer/Winter Rearing	Upper Sacramento River	The Recovery Plan mentions this action in reference to the juveniles produced in the Sacramento River. La Barranca floodplain project needs	N	L	L	Y	Y	N	Y	Enhancement		Y		2	3	1	1	3	4	0	4	2	0	1	**21**
NWC-13	Eliminate sources of chronic sediment delivery from roads and other near stream development by out-sloping roads, constructing diversion prevention dips, replacing under-sized culverts and applying other	Spawning, Egg Incubation	Clear Creek	Lower priority since most feasible projects already completed. Parks is pursing funding for inventory.	N	L	L	Y	Y	N	Y	Enhancement		Y		2	3	1	1	3	4	0	4	2	0	1	**21**
NWC-18 a	Protect/enhance existing riparian habitat and corridors and establish and restore additional riparian habitat where needed.	Juvenile Emigration, Summer/Winter Rearing	Cottonwood Creek	This action, while on Cottonwood Creek, is mentioned in the Recovery Plan as benefiting Beegum Creek. Some AFRP projects are in place.	N	L	L	Y	Y	N	Y	Enhancement		Y		2	3	1	1	3	4	0	4	2	0	1	**21**
NWC-18 b	Implement non-native plant (e.g. Arundo) eradication plan.	Juvenile Emigration, Summer/Winter Rearing	Cottonwood Creek	See NWC-18 a.	N	L	L	Y	Y	N	Y	Enhancement		Y		2	3	1	1	3	4	0	4	2	0	1	**21**
NS-84 a	Rehabilitate Yuba River Narrows spawning habitat.	Spawning	Yuba River	Rehabilitates habitat and supplies 100 tons of gravel that is then maintained under the Corps requirements. Pilot project completed in 2007. Requires injection of 54,000 cubic yards of gravel.	Maybe	M	H	Y	N	N	Y	Enhancement		Y		3	0	2	5	3	0	0	4	2	0	1	**20**
NS-63	Construct improved fish passage facilities at Daguerre Point Dam to provide for segregation of adult spring-run and fall-run chinook salmon.	Spawning, Egg Incubation	Yuba River	It is difficult to determine how segregation would contribute to the HEA threshold. Impact to migrating steelhead is also a concern. No preferred alternative selected yet.	Maybe	H	H	Y	N	Y	N	Enhancement		Y		2	0	3	5	3	0	4	0	2	0	1	**20**
NS-16	Protect spring-run Chinook salmon summer holding pools in Big Chico Creek by obtaining from willing sellers titles or conservation easements on lands adjacent to the pools	Adult Holding	Big Chico Creek	Benefit of this action would depend on the implementation of the Iron Canyon Fish Ladder project. Cost would be dependent on the	N	L	L	Y	N	Y	Y	Enhancement		Y		1	3	1	1	3	0	4	4	2	0	1	**20**
NWC-1	Enhance watershed resiliency by identifying and implementing projects that would reduce the potential for, and magnitude of a catastrophic wildfire, restore meadows to potentially increase summer flows and reduce local water temperatures, or increase riparian	All	Beegum Creek	Issue?	N	L	L	Y	Y	N	N	Enhancement				6	3	1	1	3	4	0	0	2	0	0	**20**
NWC-3	Eliminate sources of chronic sediment delivery from roads and other near stream development by out-sloping roads, constructing diversion prevention dips, replacing under-sized culverts and applying other storm proofing guidelines.	Spawning, Egg Incubation	Beegum Creek		N	L	L	Y	Y	N	Y	Enhancement				2	3	1	1	3	4	0	4	2	0	0	**20**
SBW-4 a	Modify vegetation maintenance practices to encourage riparian growth and establish a native vegetated corridor in currently unvegetated/leveed reaches of the middle Sacramento River.	Juvenile Emigration, Summer/Winter Rearing	Middle Sacramento River	Worth considering after assessing current carrying capacity of Sacramento River mainstem habitats.	N	L	L	Y	Y	N	Y	Enhancement				2	3	1	1	3	4	0	4	2	0	0	**20**
SBW-4 b	Create and restore side-channel habitats to increase the quantity and quality of off-channel rearing (and spawning) areas.	Juvenile Emigration, Summer/Winter Rearing	Middle Sacramento River	Worth considering after assessing current carrying capacity of Sacramento River mainstem habitats.	N	L	L	Y	Y	N	Y	Enhancement				2	3	1	1	3	4	0	4	2	0	0	**20**
NS-44	Implement all or portions of the Deer Creek floodplain feasibility study, which can include (1) purchasing conservation easements, (2) moderate levee setbacks	Summer/Winter Rearing	Deer Creek	The Deer Creek Watershed Conservancy completed a floodplain feasibility study. The study developed	N	L	L	N	N	N	Y	Expansion	Y	Y		1	3	1	1	0	0	0	4	5	3	1	**19**
NS-89	Implement Deer Creek Salmon and Steelhead Spawning Habitat Expansion Project.	Spawning	Deer Creek/ Yuba River	Restore habitat via gravel augmentation, barrier removal, invasive species removal, and riparian revegetation. Project enhances mitigation requirements.	N	M	L	Y	N	?	Y	Enhancement		Y		3	3	2	1	3	0	0	4	2	0	1	**19**
SBW-14	Implement projects that acquire strategic floodplain easements to re-establish floodplain connectivity in areas constricted by levees.	Summer/Winter Rearing	Sacramento River	The Recovery Plan mentions this action in reference to the juveniles produced in the Sacramento River. Worth considering after assessing current carrying capacity of Sacramento River mainstem habitat.	N	L	L	Y	Y	N	Y	Enhancement				1	3	1	1	3	4	0	4	2	0	0	**19**
NS-80	Reduce sources of chronic road related erosion of sediment	All	Deer Creek	On-going activity.	N	L	L	N	N	N	Y	Enhancement		Y		6	3	1	1	0	0	0	4	2	0	1	**18**

NS-81	Reduce sources of chronic road related erosion of sediment.	All	Mill Creek	On-going activity.	N	L	L	N	N	N	Y	Enhancement		Y	6	3	1	1	0	0	0	4	2	0	1	**18**
NS-35	Acquire water from willing sellers consistent with applicable guidelines or negotiate agreements to supplement instream flows in the lower ten miles of Deer Creek to ensure passage of adult and juvenile spring-run Chinook salmon and steelhead over three diversion dams.	Adult Immigration, Juvenile Emigration	Deer Creek	Water exchange program is being funded through the 4-Pumps mitigation program.	N	M	L	N	N	Y	Y	Enhancement		Y	1	3	2	1	0	0	4	4	2	0	1	**18**
NS-36	Implement water exchange agreement with the Deer Creek Irrigation Company and the Stanford-Vina Irrigation District and dedicate fish passage flows.	Adult Immigration, Adult Holding	Deer Creek	Check status of DCID exchange agreement.	N	M	L	N	N	Y	Y	Enhancement		Y	1	3	2	1	0	0	4	4	2	0	1	**18**
NS-37 a	Permit and construct a state-of-the-art fish ladder that meets NMFS' adult fish passage criteria and install a new apron at the Cone-Kimball Diversion.	Adult Immigration	Deer Creek	Project to improve fish passage at Stanford-Vina Dam is being considered as part of Deer Creek Floodplain Study as of Oct 2008; projects to improve fish passage at	N	M	L	N	N	Y	Y	Enhancement		Y	1	3	2	1	0	0	4	4	2	0	1	**18**
NS-37 b	Install state-of-the-art fish ladder at Stanford-Vina Dam.	Adult Immigration	Deer Creek	See NS-37 a.	N	M	L	N	N	Y	Y	Enhancement		Y	1	3	2	1	0	0	4	4	2	0	1	**18**
NS-34	Construct fish ladder at Upper Deer Creek falls.	Adult Immigration	Deer Creek	Habitat for spring-run is limited.	Maybe	H	L	N	N	Y	N	Expansion	Y		1	0	3	1	0	0	4	0	5	3	0	**17**
NS-9	Implement projects to increase floodplain habitat availability to improve habitat conditions for juvenile rearing.	Summer/Winter Rearing	Antelope Creek	Additional information needed.	N	L	L	Y	N	N	N	Expansion	Y		1	3	1	1	3	0	0	0	5	3	0	**17**
NS-21	Implement projects to increase floodplain habitat availability to improve habitat conditions for juvenile rearing.	Summer/Winter Rearing	Big Chico Creek	Additional information needed.	N	L	L	Y	N	N	N	Expansion	Y		1	3	1	1	3	0	0	0	5	3	0	**17**
NS-52 b	Conduct fish passage evaluation at all agricultural diversions to determine if they meet NMFS' fish passage criteria, and design and install state-of-the-art fish passage facilities at diversions that currently do	Adult Immigration	Mill Creek	Issue?	N	M	L	N	N	Y	Y	Enhancement			1	3	2	1	0	0	4	4	2	0	0	**17**
NS-2	Enhance watershed resiliency by identifying and implementing projects that would reduce the potential for, and magnitude of a catastrophic wildfire, restore meadows to potentially increase summer flows and reduce local water temperatures, or increase riparian shade.	All	Antelope Creek	Questionable match (fire) and additional information needed (meadows).	N	L	L	Y	N	N	N	Enhancement		Y	6	3	1	1	3	0	0	0	2	0	1	**17**
NS-76	Install Juvenile Bypass at the Edwards Dam Ladder.	Juvenile Emigration	Antelope Creek	AFRP funded a feasibility study, environmental documentation, permits, and design for a solution at this site in 2008. Implementation can begin in 2010 but funding needed.	N	M	L	Y	N	N	Y	Enhancement		Y	1	3	2	1	3	0	0	4	2	0	1	**17**
NS-13	Conduct Fish Passage evaluation at all dams and diversions to determine if they meet NMFS fish passage criteria. Design and install state-of-the-art fish passage facilities at diversions (1-mile dam, 5-mile dam) that	Adult Immigration	Big Chico Creek		N	M	L	Y	N	N	Y	Enhancement		Y	1	3	2	1	3	0	0	4	2	0	1	**17**
NS-6	Identify gravel starved areas in Antelope Creek and implement gravel additions.	Spawning	Antelope Creek	Issue? USFS favors correcting undersized culverts to improve natural bedload instead.	N	L	L	Y	N	N	Y	Enhancement			3	3	1	1	3	0	0	4	2	0	0	**17**
B-20	Restore the current Lake Red Bluff footprint to riparian habitat.	All	Upper Sacramento River	The Recovery Plan mentions this action in reference to the juveniles produced in the Sacramento River.	Maybe	L	L	Y	Y	N	N	Enhancement			6	0	1	1	3	4	0	0	2	0	0	**17**
NS-17	Enhance watershed resiliency by identifying and implementing projects that would reduce the potential for, and magnitude of a catastrophic wildfire, restore meadows to potentially increase summer flows and reduce local water temperatures, or increase riparian shade.	All	Big Chico Creek		N	L	L	Y	N	N	N	Enhancement			6	3	1	1	3	0	0	0	2	0	0	**16**
NS-19	Identify stream reaches that have been most altered by anthropogenic factors and reconstruct a natural channel geometry scaled to current channel forming flows.	All	Big Chico Creek	Additional information needed.	N	L	L	Y	N	N	N	Enhancement			6	3	1	1	3	0	0	0	2	0	0	**16**
NS-49	Identify stream reaches that have been most altered by anthropogenic factors and reconstruct a natural channel geometry scaled to current channel forming flows.	All	Feather/Yuba Rivers		N	L	L	Y	N	N	N	Enhancement			6	3	1	1	3	0	0	0	2	0	0	**16**
NS-3	Conduct fish passage evaluation at all agricultural diversions to determine if they meet NMFS' fish passage criteria. Design and install state-of-the-art fish passage facilities at diversions that currently do not	Adult Immigration	Antelope Creek	The Edwards Dam Ladder construction project was completed in October 2007. Juvenile bypass facilities are still needed.	N	M	L	Y	N	Y	N	Enhancement			1	3	2	1	3	0	4	0	2	0	0	**16**
NS-12	Remove the partier (old agricultural dam) approximately 0.4 river miles downstream of Higgins Hole, located on private property.	Adult Immigration	Big Chico Creek	Fish passage evaluation has not been done for this site. Additional information needed.	N	L	L	Y	N	Y	N	Enhancement		Y	1	3	1	1	3	0	4	0	2	0	1	**16**
NS-7	Build sediment retention structures; fortify streambanks with native vegetation.	Spawning, Egg Incubation	Antelope Creek	Issue?	N	L	L	Y	N	N	Y	Enhancement			2	3	1	1	3	0	0	4	2	0	0	**16**
NS-22	Cooperate with local landowners to encourage revegetation of denuded stream reaches; and establish, restore, and maintain riparian habitat on Big Chico Creek.	Juvenile Emigration, Summer/Winter Rearing	Big Chico Creek	Additional information needed.	N	L	L	Y	N	N	Y	Enhancement			2	3	1	1	3	0	0	4	2	0	0	**16**
SBW-1 a	Implement bank revetment removal programs and projects and breach or remove abandoned levees during set-back levee projects.	Juvenile Emigration, Summer/Winter Rearing	Upper and Middle Sacramento River	Worth considering after assessing current carrying capacity of Sacramento River mainstem habitats.	N	L	L	Y	Y	N	N	Enhancement			2	3	1	1	3	4	0	0	2	0	0	**16**
SBW-1 b	Restore a continuous 100-mile stretch of ecologically viable riparian habitat to flood-prone lands along the river between Red Bluff and Colusa.	Juvenile Emigration, Summer/Winter Rearing	Upper and Middle Sacramento River	Worth considering after assessing current carrying capacity of Sacramento River mainstem habitats.	N	L	L	Y	Y	N	N	Enhancement			2	3	1	1	3	4	0	0	2	0	0	**16**
SBW-3 a	Promote native riparian (e.g., willows) species through eradication of non-native species (e.g., Arundo, tamarisk).	Juvenile Emigration, Summer/Winter Rearing	Lower Sacramento River	Worth considering after assessing current carrying capacity of Sacramento River mainstem habitats.	N	L	L	Y	Y	N	N	Enhancement			2	3	1	1	3	4	0	0	2	0	0	**16**
SBW-3 b	Modify vegetation maintenance practices to encourage riparian growth and establish a native vegetated corridor in currently unvegetated/leveed reaches of the lower Sacramento River especially between Colusa and Verona.	Juvenile Emigration, Summer/Winter Rearing	Lower Sacramento River	See SBW-3 a.	N	L	L	Y	Y	N	N	Enhancement			2	3	1	1	3	4	0	0	2	0	0	**16**
SBW-7	Implement projects that consolidate and screen existing diversions where feasible.	Juvenile Emigration	Sacramento River	Worth considering after assessing current carrying capacity of Sacramento River mainstem habitats. USBR required to fund priority diversions identified in the Anadromous Fish Screen Program under the OCAP BO.	Maybe	L	L	Y	Y	N	Y	Enhancement			1	0	1	1	3	4	0	4	2	0	0	**16**
NS-20	Eliminate sources of chronic sediment delivery from roads and other near stream development by out-sloping roads, constructing diversion prevention dips, replacing under-sized culverts and applying other storm proofing guidelines.	Egg Incubation	Big Chico Creek	Additional information needed.	N	L	L	Y	N	N	Y	Enhancement			1	3	1	1	3	0	0	4	2	0	0	**15**
NS-47	Design and install state-of-the-art fish screens at diversions that currently do not meet the NMFS fish screen criteria.	Juvenile Emigration	Feather River		N	L	L	Y	N	N	Y	Enhancement			1	3	1	1	3	0	0	4	2	0	0	**15**
B-12	Develop and increase application of alternative diversion technologies that eliminate entrainment.	Juvenile Emigration	Battle Creek		N	L	L	Y	Y	N	N	Enhancement			1	3	1	1	3	4	0	0	2	0	0	**15**
SBW-11	Develop and increase application of alternative diversion technologies that eliminate entrainment.	Juvenile Emigration	Sacramento River	Worth considering after assessing current carrying capacity of Sacramento River mainstem habitats.	N	L	L	Y	Y	N	N	Enhancement			1	3	1	1	3	4	0	0	2	0	0	**15**
B-18	Conduct periodic (e.g., every 5 years) spawning gravel assessments in the upper Sacramento River (i.e., above RBDD) and implement gravel augmentation projects, as necessary.	Spawning	Sacramento River	Benefits steelhead but not spring-run.	Maybe	M	L	Y	Y	N	N	Enhancement			3	0	2	1	3	4	0	0	2	0	0	**15**
NS-57	Implement projects to increase floodplain habitat availability to improve habitat conditions for juvenile rearing.	Summer/Winter Rearing	Mill Creek	Issue?	N	L	L	N	N	N	N	Expansion	Y		1	3	1	1	0	0	0	0	5	3	0	**14**
NS-24	Enhance watershed resiliency by identifying and implementing projects that would reduce the potential for, and magnitude of a catastrophic wildfire, restore	All	Butte Creek	Questionable match (fire) and additional information needed (meadows).	N	L	L	N	N	N	N	Enhancement		Y	6	3	1	1	0	0	0	0	2	0	1	**14**
NS-31	Implement projects that consolidate and screen existing diversions where feasible.	All	Butte Creek	Additional information needed.	N	L	L	N	N	N	N	Enhancement		Y	6	3	1	1	0	0	0	0	2	0	1	**14**
NS-32	Retrofit Magalia Dam on Little Butte Creek in order to provide for more storage to use for fisheries flows.	All	Little Butte Creek	An earthquake retrofit is necessary and might be an opportunity to increase storage to benefit fisheries flows. This would primarily benefit steelhead.	N	M	L	N	N	N	N	Enhancement			6	3	2	1	0	0	0	0	2	0	0	**14**
NS-38	Enhance watershed resiliency by identifying and implementing projects that would reduce the potential for, and magnitude of a catastrophic wildfire, restore meadows (Deer Creek meadows, Childs meadows, Gurnsey Creek, and North Fork Deer Creek) to potentially increase summer flows and reduce local water temperatures, or increase riparian shade.	All	Deer Creek	Questionable match (fire) and additional information needed (meadows).	N	L	L	N	N	N	N	Enhancement		Y	6	3	1	1	0	0	0	0	2	0	1	**14**
NS-46	Identify stream reaches that have been most altered by anthropogenic factors and reconstruct a natural channel geometry scaled to current channel forming flows.	All	Deer Creek		N	L	L	N	N	N	N	Enhancement		Y	6	3	1	1	0	0	0	0	2	0	1	**14**
NS-79	Provide functional fish ladder at Lower Deer Creek falls.	Adult Immigration	Deer Creek	USFS supports DFG efforts to correct the ladder.	N	M	L	N	N	Y	N	Enhancement		Y	1	3	2	1	0	0	4	0	2	0	1	**14**
NS-26	Identify gravel starved areas in Butte Creek and implement gravel additions. Develop a spawning gravel budget and implement an augmentation plan and use flow management to optimize spawning	Spawning	Butte Creek		N	L	L	N	N	N	Y	Enhancement			3	3	1	1	0	0	0	4	2	0	0	**14**
B-2	Implement Phase 2 of the Battle Creek Restoration **project, as defined by the Memorandum of** Understanding (i.e., removal of Coleman Diversion Dam, South Diversion Dam, Soap Creek Feeder, and Lower Ripley Creek Feeder; fish ladder and screen construction at Inskip Diversion Dam; tailrace connector between South Powerhouse and Inskip Canal; and streamflow increases in South Fork Battle Creek).	All	Battle Creek	Estimated cost $47 million but has matching funds. Provides access to 16.3 miles of prime habitat. Required under OCAP BO.	Y	H	H	Y	Y	Y	Y	Expansion	Y	Y	6	-25	3	5	3	4	4	4	5	3	1	**13**
NS-29	Identify stream reaches that have been most altered by anthropogenic factors and reconstruct a natural channel geometry scaled to current channel forming flows.	All	Butte Creek		N	L	L	N	N	N	N	Enhancement			6	3	1	1	0	0	0	0	2	0	0	**13**
NS-59	Identify stream reaches that have been most altered by anthropogenic factors and reconstruct a natural channel geometry scaled to current channel forming	All	Mill Creek	Issue?	N	L	L	N	N	N	N	Enhancement			6	3	1	1	0	0	0	0	2	0	0	**13**
NS-37 c	Design and install state-of-the-art fish passage facilities at diversions that currently do not meet the passage criteria. Study feasibility of consolidating diversion points to minimize the number of diversions on Deer	Adult Immigration	Deer Creek	See NS-37 a.	N	L	L	N	N	Y	N	Enhancement		Y	1	3	1	1	0	0	4	0	2	0	1	**13**
NS-37 d	Conduct a study designed to determine adult fish passage flows at critical riffles and fish ladders; recommend and implement actions to acquire the flows indicated for passage.	Adult Immigration	Deer Creek	See NS-37 a.	N	L	L	N	N	N	Y	Enhancement		Y	1	3	1	1	0	0	0	4	2	0	1	**13**
NS-30	Promote or create riparian buffer strips between the Butte Creek channel and adjacent land uses.	Juvenile Emigration, Summer/Winter Rearing	Butte Creek		N	L	L	N	N	N	Y	Enhancement			2	3	1	1	0	0	0	4	2	0	0	**13**
NS-40	Build sediment retention structures; fortify streambanks with native vegetation.	Spawning, Egg Incubation	Deer Creek	Issue?	N	L	L	N	N	N	Y	Enhancement			2	3	1	1	0	0	0	4	2	0	0	**13**
NS-56	Build sediment retention structures; fortify streambanks with native vegetation.	Spawning, Egg Incubation	Mill Creek	Issue?	N	L	L	N	N	N	Y	Enhancement			2	3	1	1	0	0	0	4	2	0	0	**13**
NS-69	Improve efficiency of screening devices at Brophy-South Yuba water diversion and other unscreened diversions.	Juvenile Emigration	Yuba River	Required under Yuba River Accord and BO.	Maybe	L	L	Y	N	N	Y	Enhancement		Y	1	0	1	1	3	0	0	4	2	0	1	**13**
SBW-3 c	Restore a continuous 85-mile stretch of riparian habitat of an appropriate width to maintain ecologically viable function to flood-prone lands along both banks of the river between Colusa and	Juvenile Emigration, Summer/Winter Rearing	Lower Sacramento River	See SBW-3 a. Floodplain restoration required in either Yolo Bypass or Lower Sacramento River in OCAP BO.	Maybe	L	L	Y	Y	N	N	Enhancement			2	0	1	1	3	4	0	0	2	0	0	**13**
NS-77	Conduct Antelope Creek valley floor channel analysis and implement recommended actions.	Adult Immigration, Juvenile	Antelope Creek		N	L	L	Y	N	?	N	Enhancement		Y	1	3	1	1	3	0	0	0	2	0	1	**12**
NS-8	Implement bank revetment removal programs and projects and breach or remove abandoned levees during set-back levee projects.	Summer/Winter Rearing, Juvenile Emigration	Antelope Creek	Issue?	N	L	L	Y	N	N	N	Enhancement			1	3	1	1	3	0	0	0	2	0	0	**11**
NS-10	Implement projects that cooperatively work with landowners to modify existing diversions so that fish do not become entrained in agricultural fields.	Juvenile Emigration	Antelope Creek	Additional information needed.	N	L	L	Y	N	N	N	Enhancement			1	3	1	1	3	0	0	0	2	0	0	**11**

NS-41	Identify gravel starved areas in Deer Creek and implement gravel additions. Re-design highway 32 culvert crossing at Calf Creek to allow for unimpeded	Spawning	Deer Creek	Issue? HWY 32 culvert managed by CALTRANS (need to be included).	N	L	L	N	N	?	N	Enhancement			3	3	1	1	0	0	0	0	2	0	0	**10**
NS-54	Restore meadows and reduce stream channel incisement and bank erosion by modifying grazing practices and excluding cattle from nearshore zones, and reduce the potential for, and magnitude of a catastrophic wildfire.	Spawning, Egg Incubation	Mill Creek		N	L	L	N	N	N	N	Enhancement		Y	2	3	1	1	0	0	0	0	2	0	1	**10**
NS-45	Identify and implement projects designed to improve downstream passage conditions for juveniles.	Juvenile Emigration	Deer Creek		N	L	L	N	N	N	N	Enhancement		Y	1	3	1	1	0	0	0	0	2	0	1	**9**
NS-60	Establish, restore, and maintain riparian habitat along the lower reaches of Mill Creek.	Juvenile Emigration, Summer/Winter Rearing	Mill Creek	Issue? Past AFRP project.	N	L	L	N	N	N	N	Enhancement			2	3	1	1	0	0	0	0	2	0	0	**9**
NS-64	Modify the fish ladders at Daguerre Point Dam to provide full fish passage.	Adult Immigration	Yuba River	No preferred alternative selected yet.	Maybe	L	L	Y	N	N	N	Enhancement		Y	1	0	1	1	3	0	0	0	2	0	1	**9**
NS-65	Facilitate passage of juvenile salmonids by modifying the dam face of Daguerre Point Dam.	Juvenile Emigration	Yuba River	No preferred alternative selected yet.	Maybe	L	L	Y	N	N	N	Enhancement		Y	1	0	1	1	3	0	0	0	2	0	1	**9**
NS-58	Identify and implement projects designed to improve downstream passage conditions for juveniles.	Juvenile Emigration	Mill Creek	Issue?	N	L	L	N	N	N	N	Enhancement			1	3	1	1	0	0	0	0	2	0	0	**8**
NS-28	Reduce the number of temporary passage impediments installed to create swimming holes in Butte Creek near Chico; conduct associated public outreach projects.	Adult Immigration	Butte Creek		Maybe	M	L	N	N	?	N	Enhancement			1	0	2	1	0	0	0	0	2	0	0	**6**
B-15	Conduct feasibility studies for spring-run Chinook salmon access to habitat above Shasta Dam, including assessing habitat suitability and passage logistics for adults and juvenile. If the feasibility studies support fish passage then design and conduct an experimental fish passage program to evaluate adult distribution,	Adult Immigration, Adult Holding, Spawning	Sacramento River	Required under OCAP BO.	Y	H	H	Y	Y	Y	N	Expansion	N	Y	4	-25	3	5	3	4	4	0	5	0	1	**4**
NS-93	Evaluate and implement fish passage upstream of Folsom Lake into the Middle Fork (and possibly North Fork) of the American River.	All	American River	Required under OCAP BO.	Y	M	H	Y	N	Y	N	Expansion	N	Y	6	-25	2	5	3	0	4	0	5	0	1	**1**
NWC-8	Reactivate natural geomorphic processes by providing high flows to move gravel downstream and clean fine sediment from spawning areas.	Spawning, Egg Incubation	Clear Creek	This action would primarily include paying for monitoring and forfeited power generation. Works synergistically with NWC-6 and NWC-20. EWP funding suspended.	Y	L	L	Y	Y	Y	Y	Enhancement		Y	2	-25	1	1	3	4	4	4	2	0	1	**-3**
B-1	Implement Phase 1(b) of the Battle Creek Restoration Project as defined by the Memorandum of Understanding (i.e., tailrace connector between Inskip	Adult Immigration	Battle Creek	Estimated cost $26 million but has matching funds; required under OCAP BO	Y	L	L	Y	Y	N	Y	Enhancement		Y	1	-25	1	1	3	4	0	4	2	0	1	**-8**
															Range of potential scores	6, 4, 3, 2, 1	3, 0, -25	3, 2, 1	5, 3, 1	3, 0	4, 0	4, 0	4, 0	5, 1	3, 0	1, 0	
															Range of potential scores	6, 4, 3, 2, 1	3, 0, -25	3, 2, 1	5, 3, 1	2, 0	2, 0	4, 0	4, 0	5, 1	3, 0	1, 0	